

Remarks

I. Introduction

This is in response to the Office Action dated May 30, 2008.

The Office Action objected to the drawings under 37 C.F.R. §1.83(a) because as failing to show every feature of the invention specified in the claims.

The Office Action rejected claims 19-22 under 35 U.S.C. §112, first paragraph, as not being enabled by the specification.

The Office Action rejected claims 19-22 under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The Office Action rejected claims 19-22 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,330,614 to Aggarwal et al. (Aggarwal) in view of U.S. Patent No. 6,055,561 to Feldman et al. (Feldman).

Claim 19 has been amended. No new matter has been added.

Claims 19-22 are pending.

II. Objection to the Drawings

The Office Action objected to the drawings under 37 C.F.R. §1.83(a) as not showing every feature of the invention specified in the claims. The Office Action states that "the method of operating a first router (claim 19) must be shown or the feature(s) cancelled from the claim(s)". However, the features of the invention specified in claim 19 are shown at least in FIG. 2. Step 202 of FIG. 2 states "number local interfaces and group interfaces into connectivity classes," which shows the limitations of "assigning a number to each of the local interfaces" and "grouping the local interfaces into connectivity classes". Step 204 of FIG. 2 states "encode in link state packet and broadcast to other routers," which shows the limitations of "encoding information identifying the assigned

numbers and the connectivity classes into a link state packet” and “transmitting the link state packet to at least one other router in the communication network”. It is clear from the description of FIG. 2 (page 12, line 261 – page 13, line 295) that steps 202 and 203 of FIG. 2 are performed by a router connected to a communication network, and thus these steps illustrate a method for operating a router. It seems the Examiner may object to the use of the term “first” router, which is not used in describing FIG. 2. However, claim 19 has been amended to remove the term “first” router. Accordingly, for the reasons described above, withdrawal of the objection to the drawings is requested.

III. Rejections under 35 U.S.C. §112

The Office Action rejected claims 19-22 under 35 U.S.C. §112, first paragraph as not being enabled by the specification.

The Examiner alleges that the limitation of claim 19 of “grouping the local interfaces into connectivity classes” is not enabled because “Claim 19 does not recite how grouping is done or how the grouping limitation relates to the previous limitation ‘[the router] assigning a number to each local interface...’ or the previous limitation ‘the assigned number is local to the router’.” However, the limitation of “grouping the local interfaces into connectivity classes” is enabled by the specification. Page 12, lines 257-261 describe each router in an NBMA network numbering its local interfaces and grouping the local interfaces into a connectivity class, which is defined as “a set of NBMA interfaces attached to one OSPF router that are connected to a single NBMA network and hence enjoy equivalent connectivity.” This definition of “connectivity class” clearly enables one skilled in the art to group local interfaces of a router into connectivity classes (groups of interfaces connected to the same NBMA network). Furthermore, it is clear how the “grouping” limitation is related to the previous limitations in claim 19, because the local interfaces are assigned numbers and grouped into connectivity classes, and information identifying *the assigned numbers and the connectivity classes* are encoded into a link state packet, which is transmitted to

other routers in the communication network. Therefore, all limitations of claim 19 are enabled by the specification.

The Examiner further alleges that the specification does not reasonable provide enablement for the “first router” of claim 19. The Examiner states that “the significance of a first router, as opposed to all other routers in the network of a method of operating a first router, is impartial in the claim language.” Claim 19 has been amended to remove the term “first” router. As described at page 11, lines 249-251, each router in a communication network can run a distributed algorithm that discovers the NBMA connectivity associated with each of its interfaces. Such a method for operating a router to discover the NBMA connectivity of its local interfaces is shown in FIG. 2. Accordingly, the specification enables any router in a communication network to perform the method steps recited in claim 19. Therefore, amended claim 19 is enabled by the specification, and withdrawal of the rejections of claims 19-22 under 35 U.S.C. §112, first paragraph is respectfully requested.

The Office Action also rejected claims 19-22 under 35 U.S.C. §112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In particular, the Examiner alleges that the terms “local interfaces”, “local to said first router”, and “information identifying the assigned numbers” in claim 19 are unclear. Based on the page 11, line 240 – page 12, line 261 of the specification, it is clear that each router has local interfaces which are used to connect that router to NBMA networks. There is nothing unclear to one skilled in the art regarding local interfaces of a router that are used to connect the router to NBMA networks. Based on page 13, lines 274-281, it is clear that numbers, which are local to a router, are assigned to local interfaces of router to identify the local interfaces at that router. Based on page 13, lines 282-285 and FIG. 3, it is clear that local connectivity information can be used as “information identifying the assigned numbers and the connectivity classes” that is encoded into a link state packet. FIG. 3 illustrates an example of such information. Accordingly, the terms

"local interfaces", "local to said router", and "information identifying the assigned numbers and connectivity classes", are clear in light of the specification, and are not indefinite. Thus, withdrawal of the rejection under 35 U.S.C. § 112, second paragraph is respectfully requested.

IV. Rejection under 35 U.S.C. §103(a)

Independent claim 19 was rejected as being unpatentable over Aggarwal in view of Feldman. In order to "establish *prima facie* obviousness of a claimed invention, all claim limitations must be taught or suggested by the prior art." In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). Furthermore, "all words in a claim must be considered in judging the patentability of that claim against the prior art." In re Wilson, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970). See also MPEP § 2143.03. Neither of the cited references, either alone or in combination, teach all of the claim limitations of independent claim 19. Therefore, Applicants request the withdrawal of the rejection under 35 U.S.C. §103(a).

The present invention is generally directed to routing over large networks. In an embodiment of the present invention, a communication network has multiple routers. Some of the routers can be connected to one or more connection-oriented non-broadcast multiple access (NBMA) networks. Each router can be connected to NBMA networks through local interfaces of the router. As described at page 11, lines 249-251, each router discovers NBMA connectivity associated with its each of its local interfaces. In particular, as described at page 13, lines 274-294, and illustrated in steps 202 and 203 of FIG. 2, a router assigns numbers, which are local to the particular router, to the local interfaces of the router. Accordingly, each router assigns its own local numbers to its local interfaces. A router then groups the local interfaces of the router into connectivity classes. As described at page 12, lines 259-261, a connectivity class is "a set of NBMA interfaces attached to one OSPF router that are connected to a single NBMA network and hence enjoy equivalent connectivity."

Thus, the router groups local interfaces together that are connected to the same NBMA network. Local connectivity information identifying the numbers assigned to the local interfaces and the connectivity classes is encoded into a link state packet, which is transmitted to other routers in the communication network.

Independent claim 19 recites the above described aspects of the present invention. In particular, independent claim 19 recites the limitations of:

- assigning a number to each of the local interfaces wherein each of said assigned numbers is local to said router;
- grouping the local interfaces into connectivity classes;
- encoding information identifying the assigned numbers and the connectivity classes into a link state packet; and
- transmitting the link state packet to at least one other router in the communication network.

Aggarwal is directed to improving space and processing speeds in networking systems. In particular, Aggarwal describes substituting the checksum field within current IP datagram headers to solve problems related to space and processing speeds while maintaining current network infrastructure. At column 7, lines 20-28 and column 10, lines 32-33, Aggarwal describes that current IP networks assign address into one of three classes, each having a network address and a class address, with the class of addresses grouped based on the size of the network. Aggarwal describes classes A, B, and C, each having different numbers of hosts on the network. The Office Action asserts that assigning the network address to the classes is analogous to the limitation of "assigning a number to each of the local interfaces wherein each of said assigned numbers is local to said router" recited in claim 19. However, the addresses are assigned to classes that apply to hosts across an entire network. They are not assigned to local interfaces of a single router. Furthermore the addresses are network addresses used over an entire network, not numbers that are local to a particular router. Aggarwal does not show assigning numbers, which are local to a router, to local interfaces of the router. Therefore, Aggarwal

fails to disclose "assigning a number to each of the local interfaces wherein each of said assigned numbers is local to said router," as recited in independent claim 19.

The Office Action further asserts that the classes described in column 7, lines 20-28 and column 10, lines 32-33 of Aggarwal show the limitation of "grouping the local interfaces into connectivity classes" recited in claim 19. However, in Aggarwal, the network addresses are grouped into these classes, not local interfaces of a single router. Moreover, page 12, lines 259-261 of the present specification define a connectivity class as "a set of NBMA interfaces attached to one OSPF router that are connected to a single NBMA network and hence enjoy equivalent connectivity." The classes in Aggarwal are classifications of networks based on a number of hosts in the network, not a set of NBMA interfaces of a router that are connected to the same NBMA network. Therefore, Aggarwal fails to disclose "grouping the local interfaces into connectivity classes," as recited in independent claim 19.

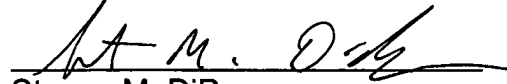
Feldman is directed to mapping IP routing information onto a technology that uses label switching and swapping, such as ATM, without the need to change the network paradigm. Feldman does not disclose "assigning a number to each of the local interfaces wherein each of said assigned numbers is local to said router" or "grouping the local interfaces into connectivity classes," as recited in independent claim 19.

For the reasons described above, neither Aggarwal nor Feldman, separately or in combination, teach all of the limitations of independent claim 19. Therefore, independent claim 19 is allowable over the cited art. All remaining claims are dependent upon an allowable independent claim and are therefore also allowable.

V. Conclusion

For the reasons discussed above, all pending claims are allowable over the cited art. Reconsideration and allowance of all claims is respectfully requested.

Respectfully submitted,-



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